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EXAMINER	
REHMAN, MOHAMMED H	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/820,976	TEMPLETON, JAMES W.	
	Examiner	Art Unit	
	MOHAMMED H. REHMAN	2116	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 May 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 5/23/08 has been entered.

2. **Claims 1-42** are presented for examination.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims **1-42** are rejected under 35 U.S.C. 103(a) as being unpatentable over Chapuis et al. (U.S. Patent No. 7,049,798 B2) (hereinafter referred to as Chapuis1) (cited by Applicant) in view of Chapuis et al. (U.S. Patent No. 7,000,125 B2) (hereinafter referred to as Chapuis2) (cited by Applicant).

As to claim 1, Chapuis1 discloses a power delivery management system (20), the system comprising:

a plurality of digital power management devices (220, 230, 240 and 250), wherein each of the plurality of power management devices comprises a plurality of functions (configuration data from 210), wherein each of the plurality of power management devices is operable to

provide power to one or more point of load devices (Though the point of load devices are not explicitly shown, Chapius1 does disclose providing a load to a circuit; column 1, lines 14-37) (column 4, lines 17-30 and column 4, lines 51-67); and

a control and communication bus (200), wherein each one of the plurality of digital power management devices is coupled to the control and communication bus (as shown in fig. 2);

wherein each respective digital power management device of the plurality of digital power management devices includes a controller (310) operable to control the functions of the respective digital power management device (column 5, lines 13-63);

wherein the plurality of digital power management devices are operable to communicate with each other (one particular POL regulator can generate clock signal 400 to synchronize other POL regulators to update data is communication between POL regulators) over the control and communication bus [Fig-2(200)] to receive information (receiving clock signal) from each other to coordinate (synchronize) their functions (column 6, lines 36-52; Fig-4).

wherein in receiving information from each other to coordinate their functions:

each of the plurality of digital power management devices is configured to receive information transmitted onto the bus by other digital power management devices of the plurality of digital power management devices [col-6 lines: 36-52 (POL regulators synchronize data generated by clock signal 400)].

Chapuis1 does not explicitly disclose each of the plurality of power management devices is configured to perform one or more of its functions based on the information transmitted onto the bus by the other digital power management device.

Chapius2 teaches a plurality of digital power management devices [column 4, lines 35-57; Fig-3(106, 108, 110 ….n etc.)] are operable to communicate with each other [Chapius2, col-7 lines: 20-28 (POL regulators communicate with each other to synchronize information)]; and

each of the plurality of power management devices is configured to perform one or more of its functions ("perform functions") based on the information transmitted onto a bus by the other digital power management device [Chapius2, col-7 lines: 41-45]. Chapius2 further teaches the additional benefit of having lower complexity and smaller size to the overall power system (column 1, lines 47-64).

It would have been obvious to one of ordinary skill of the art having the teachings of Chapuis1 and Chapuis2 at the time the invention was made, to modify power delivery management system of Chapuis1 to include the plurality of digital power management devices are operable to communicate with each other over the control and communication bus as taught by Chapuis2. One of ordinary skill in the art would be motivated to make this combination of having the plurality of digital power management devices operable to communicate with each other over the control and communication bus in view of the teachings of Chapuis2, as doing so would give the added benefit of having lower complexity and smaller size to the overall power system (as taught by Chapius2 above).

As to claim 2, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein at least one of

the plurality of digital power management devices is also operable to coordinate and/or control the functions of one or more other ones of the plurality of digital power management devices (Chapuis1 discloses the individual converters transferring a single bit to the other converters to synchronize the clocking; column 6, lines 36-52).

As to claim 3, it is directed to the system of steps set forth in claims 1 and 2. Therefore, it is rejected for the same basis as set forth hereinabove.

As to claim 4, Chapuis1 in combination with Chapius2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein the plurality of functions comprise one or more power delivery functions (as shown in the list of functions; column 4, lines 53-64); wherein each respective one of the plurality of digital power management devices includes a controller (310) operable to control the one or more power delivery functions of the respective digital power management device (column 5, lines 13-46).

As to claim 5, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein at least a subset of the plurality of digital power management devices each comprise the same functions (column 4, line 51 thru column 5, line 12).

As to claim 6, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein one or more of the plurality of digital power management devices comprises a voltage converter unit (column 4, lines 17-30).

As to claim 7, it is directed to the system of steps set forth in claims 1 and 6. Therefore, it is rejected for the same basis as set forth hereinabove.

As to claim 8, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein the control and communication bus is a digital bus (column 6, lines 36-52).

As to claims 9-12, they are directed to the system of steps set forth in claim 1 and 8. Therefore, it is rejected for the same basis as set forth hereinabove.

As to claim 13, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein each individual one of the plurality of digital power management devices is operable to be programmed and/or configured across the control and communication bus (column 4, line 51 thru column 5, line 12).

As to claim 14, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein two or more of the plurality of digital power management devices are operable to be grouped together in a current sharing configuration (column 5, lines 13-46).

As to Claims 15 and 17, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches wherein the two or more of the plurality of digital power management devices grouped in the current sharing configuration [col-5 line: 15 ("grouping POL regulators")] are operable to automatically reconfigure (POL regulators communicate with each other to synchronize information) themselves in response to a failure of one or more of the two or more of the plurality of digital power management devices grouped in the current sharing configuration [col-5 lines: 13-46 and col-7 lines: 20-28].

As to Claim 16, Chapuis1 teaches wherein plurality of power management devices operable to be automatically identified as a master device (clock signal generating POL regulator) for the current sharing configuration [Chapuis1 col-6 lines: 36-52 (POL regulator generating a clock signal to synchronize other regulators can be see as master device because it is initiating the signal to synchronize other devices].

In the same field of endeavor Chapuis2 teaches one of the two or more of the plurality of digital power management devices (POL regulators) grouped in the current sharing configuration [col-5 lines: 13-20]

As to Claims 18 and 19, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis1 further teaches wherein in support of the current-sharing configuration the master device is operable to automatically transmit one or more of:

a respective measured load current (current set point);

a respective measured load voltage (voltage set point); and

respective measured status data (voltage level, slew rate etc.) [col-7 lines: 43-54 (POL control unit uses portion of initial configuration data to determine (control) out put parameter (such as current, voltage etc.); Fig-6(630 and 640)];

As to claim 20, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein each one of the plurality of digital power management devices is operable to provide feedback data to all other ones of the plurality of digital power management devices [column 5, lines 24- 63 (142 including

monitoring sensor for output voltage/current and other parameter and communicated back to system in order to generate Power Good (PG) output signal)].

As to claim 21, it is directed to the system of steps set forth in claim l and 20. Therefore, it is rejected for the same basis as set forth hereinabove.

As to claim 22, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein the functions of the plurality of digital power management devices comprise at least one of: supply sequencing; phase offset adjustment; current sharing; voltage programming and voltage tracking; and ramp rate control (column 5, line 13 thru column 6, line 20).

As to claims 23 and 24, they are directed to the system of steps set forth in claims 1 and 22. Therefore, it is rejected for the same basis as set forth hereinabove.

As to claim 25, Chapuis1 in combination with Chapius2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein the functional features of the plurality of digital power management devices include margining (column 5, line 13 thru column 6, line 20).

As to claim 26, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein the functional features of the plurality of digital power management devices include voltage supply sequencing (column 5, line 13 thru column 6, line 20).

As to claim 27, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system further comprising at least one master control device (210) coupled to the control and communication bus, wherein the

at least one master control device is operable to centrally control the plurality of digital power management devices to implement advanced features (column 4, line 17 thru column 5, line 12).

As to claims 28, 29 and 35-39, they are directed to the system of steps set forth in claims 1 and 27. Therefore, it is rejected for the same basis as set forth hereinabove.

As to claim 30, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein each one of the plurality of digital power management devices is operable to automatically self- test [column 5, lines: 43-49 (POL regulator 106 uses default configuration when it detects there is no programming signals received through serial interface is self-test)].

As to claim 31, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein each one of the plurality of digital power management devices is operable to auto-calibrate [column 5, lines: 43-49 (implying default configuration in absence of programming signals in order operate in safe condition is calibrating/adjusting its settings to a default value)].

As to claim 32, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein the power delivery management system is comprised on a printed circuit board; wherein each of the plurality of digital power management devices is distributed on the printed circuit board (column 4, lines 31-50).

As to claim 33, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein each of the

plurality of digital power management devices comprises an integrated circuit (column 4, lines 31-50).

As to claim 34, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein the control and communication bus is a serial bus (column 6, lines 36-52).

As to claim 40, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis1 further teaches the system wherein the information transmitted onto the bus by the other digital power management devices comprises status information of respective one or more functions of the other digital power management devices [Chapuis1, col-5 lines: 47-55].

Claim 41 is rejected on grounds corresponding to the reasons given above for claim 1 and furthermore Chapuis2 discloses a system comprising: wherein each of the plurality of digital power management devices comprises an interface [Fig-4(serial interface 144)] configured to couple to a control and communication bus [Chapuis2, col-5 lines: 27-28].

As to claim 42, is directed to the system of steps set forth in claims 1 and 40. Therefore, it is rejected for the same basis as set forth hereinabove.

Response to Arguments

4. Applicant's arguments filed on 5/23/08 have been fully considered but they are not persuasive. Regarding **claim 1** applicant argues, "… claim 1, recites a plurality of digital power management devices that are operable to communicate with each other over the control and communication bus to receive information from each other that were transmitted onto the control and communication bus by the POL regulators. It is clear from Chapuis2 that the current share interface is distinct and different from the control and communication bus…". However, newly cited section of Chapuis1 teaches POL regulators communicate with each other to synchronize information over the control and communication bus [See, col-6 lines: 36-53].

Applicant further argues that "… Chapuis2 discloses distinct multiple buses coupling selected ones of the POL regulators to each other (in contrast to claim 1, which discloses a single control and communication bus that couples all the digital power management devices), each bus in Chapuis2 serving a different function". Response to this is established and set forth above by examiner.

Applicant further argues that "…Chapuis2 is in fact descriptive of current sharing, which is … achieved not over the control and communication bus but over a dedicated current share interface which does not couple all the POL devices together, merely pairs of POL devices, and which is used in addition to the control and communication (synch/data) bus that does couple all the POL devices together (see FIG. 3)". However, Chapuis1 clearly teaches the argued feature as stated above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammed H. Rehman whose telephone number is 571-272-1412. The examiner can normally be reached on 9.00-5.00 (Mon - Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rehana Perveen can be reached on 571-272-3676. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mohammed H. Rehman/
Examiner, Art Unit 2116
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